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1-800-894-9131



D1000.4 EA and D1000.4 WA Installation Instructions



Attention and Warning Symbols

You must be aware of safety when you install and use this system. This guide provides various procedures. If you do some of these procedures carelessly, you could injure or kill yourself or damage equipment or property. Some other procedures require special attention.



Marks a procedure where the following may happen:

- Personal injury or death may occur.
- Equipment or property may be damaged.



Marks the following issues:

- Important operation or maintenance instructions follow.
- Special attention is required.

Important Safety Instructions

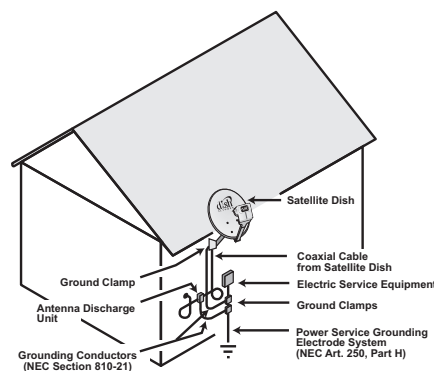
You must keep safety in mind when you install and use the D1000.4 EA or the D1000.4 WA satellite reflector. Refer to the safety instructions in this guide. In this guide, the following notes tell you when you need to pay special attention:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.

Keep the following in mind when you install the D1000.4 EA or the D1000.4 WA satellite reflector:

- Before you drill any holes in your building, make sure there are no wires or pipes near the holes.
- Install the equipment in accordance with the local building and electrical codes. If you are not sure, call a licensed building inspector or electrician for help.
- Never install the satellite reflector near power lines.
- Don't install the satellite reflector on composite materials such as strand, chip, fiber, or particle board unless the fastener attaches securely to a wall stud, rafter, or other foundation material beneath the surface.

Note to Satellite TV System Installer: This reminder is to call the satellite TV system installer's attention to the guidelines for grounding the system in accordance with the National Electrical Code (NEC)® as referenced in Articles 250, 810, and 820. These sections cover the conductor insulation, material, size, length, and connection requirements.



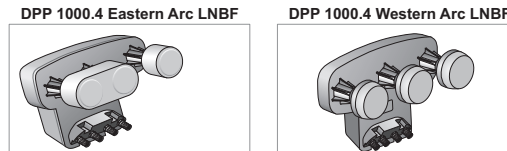
Installation Instructions



Attention! These installation instructions are intended for use by qualified professional technicians due to the complexity of the installation and compliance to national/local building and electrical codes.

Overview

These instructions guide you through the installation of a DISH Network DISH 1000.4 satellite reflector, which consists of an antenna assembly and a DISH Pro Plus Eastern Arc or Western Arc LNB.



The DISH 1000.4 is capable of receiving digital arc television signals from three DBS satellite locations: Eastern Arc 61.5°W, 72.7°W, and 77°W or Western Arc 110°W, 119°W, and 129°W. These instructions cover wall mounting only. For other mounting options (for example, pole mounting or non-penetrating mounting), see the Retailer Care Site at retailer.dishnetwork.com.

Installation Considerations

The DISH 1000.4 includes enhanced peaking controls for the azimuth and elevation settings that provide the ability to more easily obtain an optimal peaking of the satellite reflector. Refer to Figure 1 on page 2 for more details on the enhanced peaking controls for Eastern Arc and Figure 2 on page 3 for Western Arc.

The fine-tune azimuth and elevation settings require the use of a 1/2" wrench. All other nuts and bolts use a 7/16" wrench.

All DISH 1000.4 Eastern Arc equipment is marked with the circled A symbol shown below to help in identification. Only MPEG-4 capable receivers are fully compatible with Eastern Arc installations. These receivers have the Circle A marking. DISH Network ViP-series receiver models must have the circled A symbol shown on their Contents and Features label to be installed in an Eastern Arc DISH 1000.4 system.



The restriction of equipment marked with a circled A does not apply to Western Arc installations.

About the System

The DISH Pro Plus 1000.4 LNBs provide reception from the Eastern Arc 61.5°W, 72.7°W, and 77°W or from the Western Arc 110°W, 119°W, and 129°W orbital locations and provide an LNB input port to receive programming from another satellite. The following LNB types can be connected to the LNB input port: DISH Pro Single, DISH Pro Dual, DISH Pro Dual Band, or DISH Network bandstacked LNBs.

The LNB assembly supports connection of up to three satellite receivers in any of the following combinations:

- Single-cable connection to DISH Pro Plus (dual-tuner) receivers, when each input is used with a DISH Pro Plus Separator
- Single-cable connection to DISH Pro receivers

Quick Installation Instructions for Eastern Arc (EA)

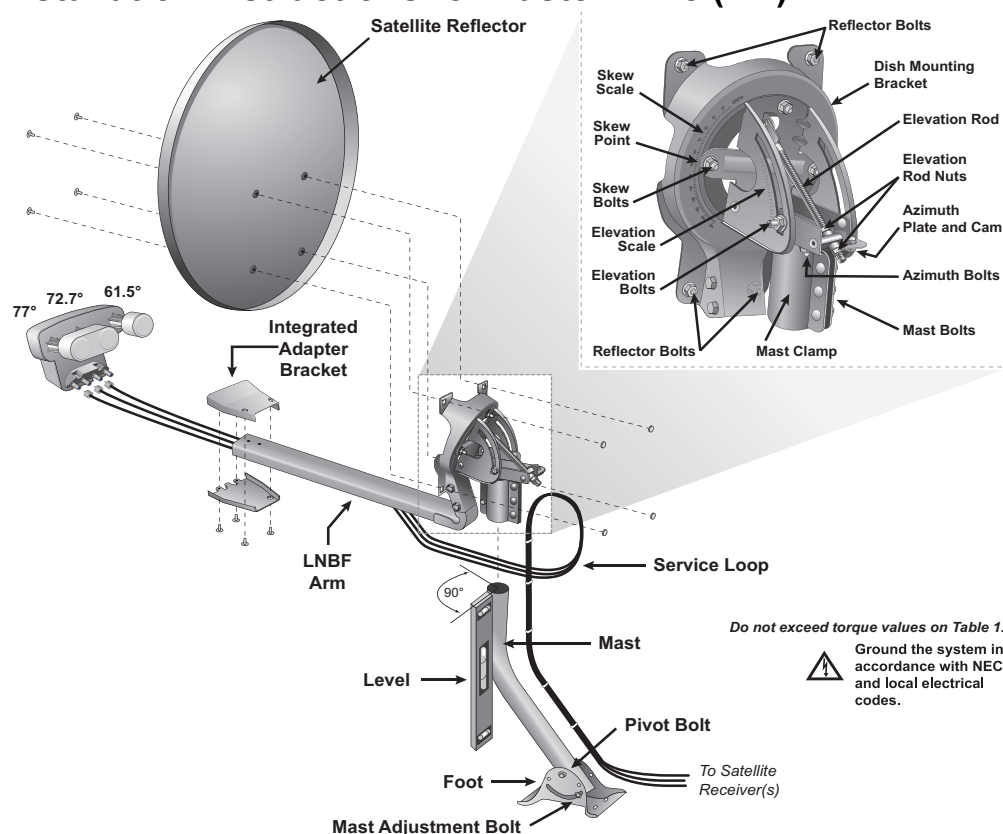


Figure 1: DISH 1000.4 Antenna Installation Overview for Eastern Arc

1. Find azimuth/elevation/skew angles for your location (instructions on page 4 and tables on page 15).
2. Find a location for the satellite reflector with a clear line of sight and a sturdy mounting surface (page 4, step 1).
3. Mount the mast, making sure it is absolutely vertical (page 4, steps 2-4). Attach struts to the mast, using the instructions that came with the struts.
4. Assemble the satellite reflector, setting the skew and elevation angles during assembly (pages 5-6, steps 5-7).
5. Mount the satellite reflector on the mast and point the satellite reflector to the azimuth angle (page 6, step 8).
6. Run cables between the satellite reflector and the receiver(s), leaving a service loop around the dish mounting bracket and attaching cables to the mast using zip ties (page 7, steps 1-2).
7. Using a peaking meter attached to the DPP 1000.4 Eastern Arc LNBF **Port 2**, rough peak the satellite reflector on 72.7°W using transponder 5 or 9 for maximum strength. Lock the mast clamp bolts (see Table 1) and reconfirm signal (page 8, steps 3-4). **Note:** If using a peaking meter, only odd transponders are detected from 72.7°W at this time.
8. Using the azimuth fine-tune cam, fine-tune the azimuth angle to achieve maximum signal. Tighten the bolts labeled with a T and reconfirm signal. Do not tighten the azimuth fine-tune cam (page 9, step 5).
9. Using the elevation rod, fine-tune the elevation angle to achieve maximum signal. Tighten the top elevation rod nut, and then tighten the side elevation bolts marked T. Reconfirm signal after tightening all elevation bolts (page 9, step 6).
10. Connect the receiver cable(s) to the DPP 1000.4 Eastern Arc LNBF **Port 1** (and **Port 2** and **Port 3**, as necessary) and receiver (page 10-12, step 9; steps 7-8 are optional and depend on your configuration).
11. Run **Check Switch** test and confirm 61.5°W, 72.7°W, and 77°W reception (page 12, steps 10-11).
12. Take a software download (page 13, step 12).
13. Run a second **Check Switch** test and confirm 61.5°W, 72.7°W, and 77°W reception (page 13, step 13).
14. Install additional receiver(s), if necessary (page 13, step 14).
15. If applicable, connect a second satellite reflector to the DPP 1000.4 Eastern Arc LNBF's **LNB In** port (page 14, steps 1-4).

Quick Installation Instructions for Western Arc (WA)

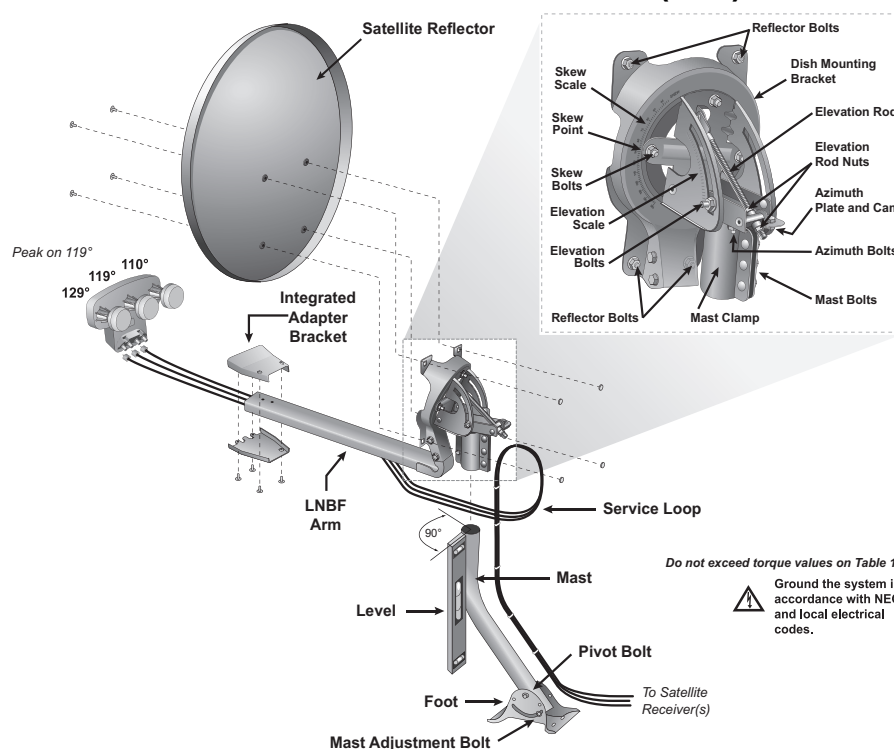


Figure 2. DISH 1000.4 Antenna Installation Overview for Western Arc

1. Find azimuth/elevation/skew angles for your location (instructions on page 4 and tables on page 21).
2. Find a location for the satellite reflector with a clear line of sight and a sturdy mounting surface (page 4, step 1).
3. Mount the mast, making sure it is absolutely vertical (page 4, steps 2-4). Attach struts to the mast, using the instructions that came with the struts.
4. Assemble the antenna assembly, setting the skew and elevation angles during assembly (pages 5-6, steps 5-7).
5. Mount the satellite reflector on the mast and point the satellite antenna to the azimuth angle (page 6, step 8).
6. Run cables between the antenna assembly and the receiver(s), leaving a service loop around the dish mounting bracket and attaching cables to the mast using zip ties (page 7, steps 1-2).
7. Using a peaking meter attached to the DPP 1000.4 Western Arc LNB **Port 1**, peak the satellite reflector on 119°W using transponder 13 or 21. Lock the mast clamp bolts (see Table 1) and reconfirm maximum signal (page 8, steps 3-4).
8. Using the azimuth fine-tune cam, fine-tune the azimuth angle to achieve maximum signal. Tighten the azimuth bolts labeled with a T and reconfirm signal (see Figure 9, page 9). Do not tighten the azimuth fine-tune cam (see page 9, step 5).
9. Using the elevation rod, fine-tune the elevation angle to achieve maximum signal. Tighten the top elevation rod nut and then tighten the elevation bolts marked T. Reconfirm signal after tightening all elevation bolts (page 9, step 6).
10. Connect the receiver cable(s) to the DPP 1000.4 Western Arc LNB **Port 1** (and **Port 2** and **Port 3**, as necessary) (pages 10-12, step 9; steps 7 and 8 are optional and depend on your configuration) and receiver. Some restrictions apply when connecting legacy receivers (see page 11).
11. Run **Check Switch** test and confirm 110°W, 119°W, and 129°W reception (page 12, steps 10-11).
12. Take a software download (page 13, step 12).
13. Run a **Check Switch** test and confirm 110°W, 119°W, and 129°W reception (page 13, step 13).
14. Install additional receiver(s), if necessary (page 13, step 14).
15. If applicable, connect a second satellite reflector to the DPP 1000.4 Western Arc LNB's **LNB In** port (page 14, steps 1-4).

Locating the Satellite Reflector

Use the *Satellite Reflector Angles* that begin on page 15 for Eastern Arc and page 21 for Western Arc to find the azimuth, elevation, and skew angles of your location's ZIP code. Write the angles in the spaces provided below.

Azimuth: _____ **Elevation:** _____ **Skew:** _____

Using these azimuth and elevation angles, find a mounting location for the satellite reflector, where it can be pointed toward the satellites.

Assembling and Mounting the Satellite Reflector

Follow these instructions to assemble the satellite reflector, mount it, and point it in the direction of the satellites.

- 1. Find location for the satellite reflector.** Using a compass and the azimuth and elevation angles, find a location for the satellite reflector where it can be pointed toward the satellites located at these angles. Make sure nothing blocks the line of sight between the satellite reflector and the satellites. Check that the line of sight will be not blocked by future growth of nearby trees or other foliage. Also ensure the mounting location provides sufficient clearance to rotate the satellite reflector as needed to point toward the satellites.
- 2. Mount mast to solid surface.** Mount the mast to a solid surface so that the satellite reflector cannot move or be bumped out of adjustment. Keep in mind that physical and environmental conditions can block your satellite reflector's ability to receive a clear satellite signal. Never mount the satellite reflector to a tree or a public utility pole.
- 3. Install struts.** Install struts at this time, using the instructions that came with the struts.
Note: Struts are not supplied or required with the optional short mast.
- 4. Align mast vertically.** Align the top part of the mast so that it is absolutely vertical. If the top part of the mast is off vertical by only a few degrees, it can be difficult or maybe even impossible for you to find the satellites. Take at least two readings with a level, on the upper mast, that are 90 degrees apart from one another (see Figure 3). Tighten all hardware to the torque values specified in Table 1 on page 8. Ensure everything is still plumb after tightening.

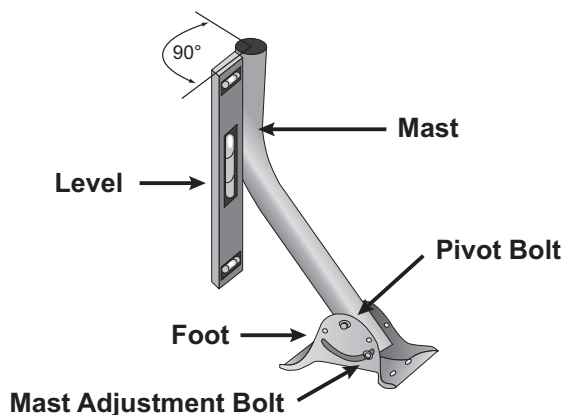


Figure 3. Vertical Alignment of the Mast.

5. **Assemble antenna assembly without LNBF.** Assemble the satellite reflector, LNBF, integrated adapter bracket, LNBF arm, mounting bracket, and mast (antenna assembly) as shown in Figure 1 for Eastern Arc or Figure 2 for Western Arc. Do not attach the LNBF assembly at this time. When attaching the Integrated Adapter Bracket to the LNBF Arm, be sure that the small posts on the bracket fit into the holes on the LNBF Arm (see Figure 4).

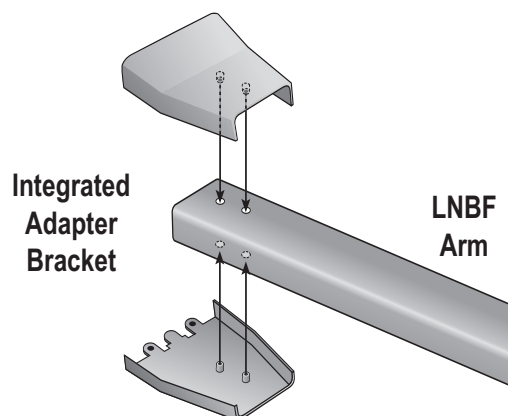


Figure 4. Bracket posts fitting into LNBF arm (bolt holes removed for clarity)

6. **Set skew.** To access the bottom skew bolt (the one not visible), loosen the elevation bolts and elevation rod nuts fully and rotate elevation to the maximum value. Loosen the skew bolts. Set the skew by rotating the elevation and skew bracket to align the mark with the required angle on the skew scale that you entered on page 4 (see Figure 5). Tighten the skew bolts securely to keep the satellite reflector from rotating. See Table 1 for the required torque values.

Note: After the skew is set, do not try to fine-tune the skew angle when aiming the satellite reflector.

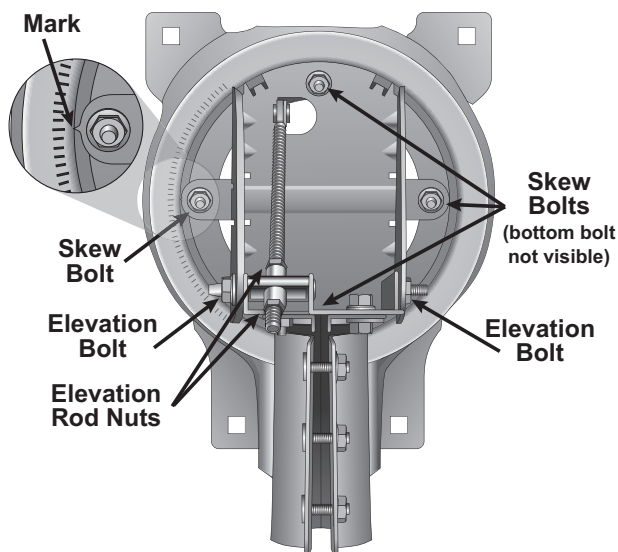


Figure 5. Skew Plate

7. **Set elevation.** Set the elevation by loosening the elevation bolts and the elevation rod nuts. Tilt the elevation and skew bracket to align the edge of the azimuth plate with the required angle on the elevation scale. Tighten both nuts on the elevation rod to hold the elevation, but do not tighten the elevation bolts at this time (see Figure 6).

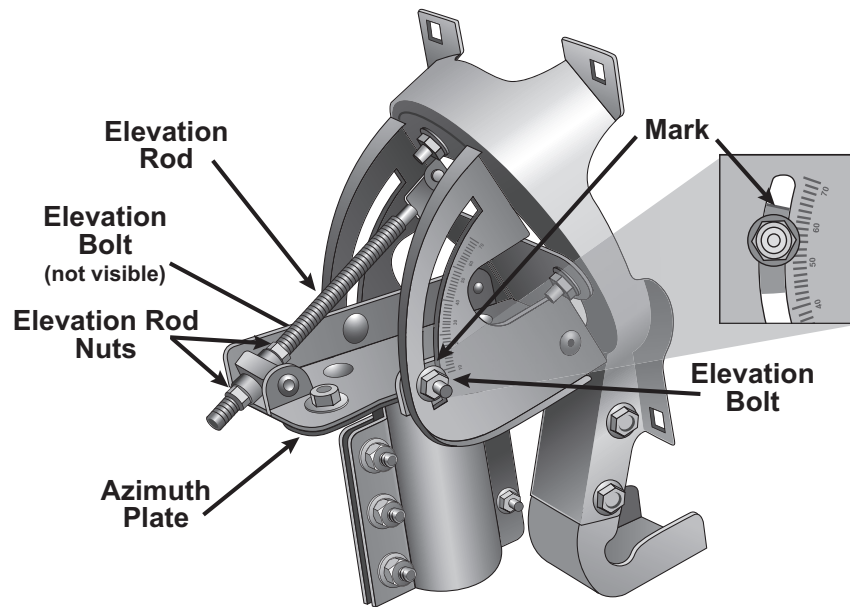


Figure 6. Setting the Rough Elevation Angle

8. **Mount the antenna assembly on the mast and point the satellite reflector.** Slide the antenna assembly down onto the mast. Make sure the azimuth plate rests on top of the mast. Turn the satellite reflector so that it points in the general direction of the satellites, using a compass and the azimuth angle you wrote on page 4.

Note: The DISH 1000.4 mast clamp has a gripping feature that helps prevent movement of the satellite reflector when fully installed. This gripping feature may have a slightly rough feel when installing the satellite reflector onto the mast or when adjusting the azimuth angle.

Completing Installation

For this installation, use the steps below while referring to Figure 1, page 2 for Eastern Arc or Figure 2, page 3 for Western Arc.

Note: Use RG-6 coaxial cables from the LNBF to the receiver, using the following cable requirements. Grounding, other devices, and in-home cabling must also meet these requirements.

- RG-6 coaxial cables rated for at least 950 to 2150 MHz must be used in this installation. Do not use existing cables such as RG-59 as they may cause signal loss. Also, be sure that any outdoor connections are made using waterproof F-connectors rated for 2150 MHz or greater.
- Follow the installation instructions included with the switch for cable length limitations.



The cable's center conductor must not extend past the rim of the F-connector more than the thickness of a nickel.



Tighten all outdoor cable connections up to the torque values recommended by the manufacturer to ensure seal against moisture. Damage caused by overtightening is *not* covered by the limited warranty.

- 1. Connect peaking meter to LNBF.** Connect a temporary cable to a peaking meter. Connect the temporary cable to **PORT 2** for Eastern Arc (72.7° W) or **PORT 1** for Western Arc (119°W) of the DISH Pro Plus LNBF (see Figure 7). **PORT 2** provides signal from the 72.7°W satellite, while **PORT 1** provides signal from the 119°W satellite.

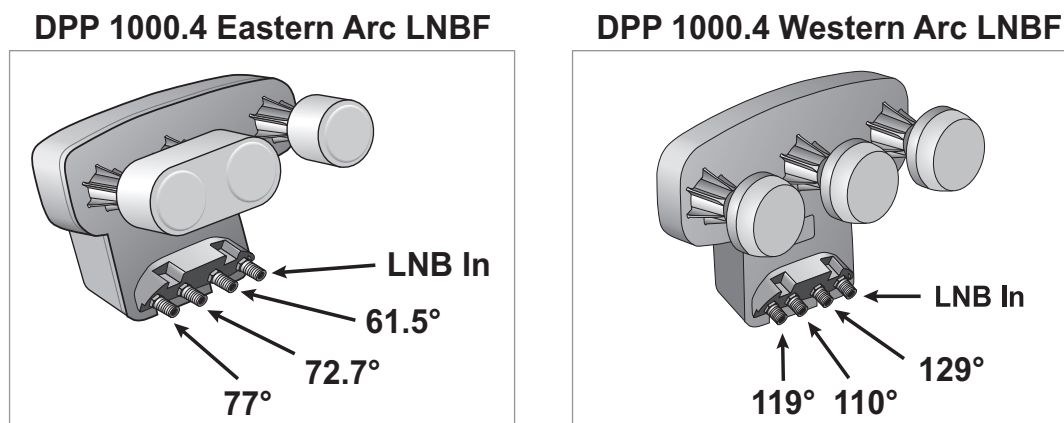


Figure 7. Bottom view of LNBF Assembly showing Port 2 (72.7°W) and 1 (119°W) on DISH Pro Plus Eastern or Western Arc LNBF

- 2. Mount LNBF onto LNBF arm.** Mount the LNBF assembly on the adapter bracket and LNBF arm as shown on Figure 1, page 2 or Figure 2, page 3.

3. **Rough peak the satellite reflector for signal on the EA 72.7°W or the WA 119°W.** Rough peak the satellite reflector for signal on the Eastern Arc 72.7°W or the Western Arc 119°W satellite signal using the azimuth and elevation settings you wrote on page 4. Do not adjust the skew.

Note: If you cannot find the Eastern Arc 72.7°W or the Western Arc 119°W signal, try adjusting the elevation up or down one or two degrees. When peaking on Eastern Arc 72.7°W, use transponder 5 or 9. When peaking on the Western Arc 119°W, use transponder 13 or 21.

4. **Tighten three mast bolts and reconfirm signal strength.** With the peaking meter still connected, confirm that the front two mast bolts (the mast bolts that are closest to the reflector) are tight. Tighten the three mast bolts labeled with a T to the torque values listed in Table 1 (see Figure 8). Reconfirm signal strength after tightening the bolts. Peaking goal at this point is to get signal locked. Maximizing signal is in a later step.

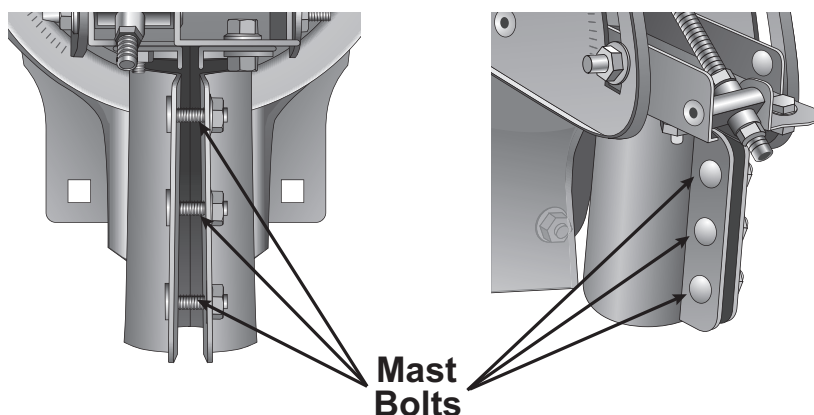


Figure 8. Mast bolts

Table 1: Torque Values

Location	Torque Value (ft-lbs)
Pivot bolt (Mast foot; ensure no mast deformation occurs during tightening)	3
Mast adjustment bolts	12
Satellite reflector mounting bolts	8
Mast bolts	12
Elevation bolts	12
Elevation rod nuts	Handtight
Azimuth bolts (do not tighten azimuth fine-tune cam)	12
Skew bolts	12
LNBF arm to elevation and skew bracket bolts	4
LNBF and LNBF bracket attachment hardware	Handtight

5. **Fine-tune the azimuth angle.** With the peaking meter still connected, fine-tune the azimuth angle (see Figure 9). Ensure the three azimuth bolts are finger-tight. Using a 1/2" wrench, rotate the azimuth fine-tune cam to adjust the azimuth angle to achieve maximum signal. After obtaining maximum signal, tighten the three azimuth bolts labeled with a T3 to the recommended torque value given in Table 1. **Do not torque the azimuth fine-tuning cam nut.**

Note: You can adjust the azimuth angle three degrees in either direction using the azimuth fine-tune cam. If the azimuth angle needs to be adjusted more than three degrees, loosen the mast bolts to make the adjustment.

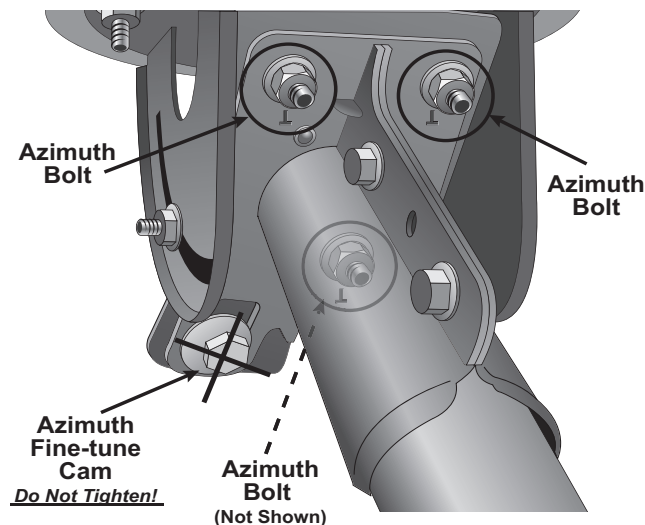


Figure 9. Fine tuning the azimuth angle

6. **Fine-tune elevation angle.** Using the peaking meter, fine-tune the elevation angle. Using a 1/2" wrench, loosen the top elevation nut on the elevation rod to allow the satellite reflector to be moved up and down in elevation. Move the bottom elevation nut along the elevation rod to adjust the satellite reflector's elevation angle and to achieve maximum signal. After obtaining maximum signal, tighten the top elevation nut on the elevation rod, then tighten the elevation bolts labeled with a T to the recommended torque value given in Table 1 (see Figure 10).

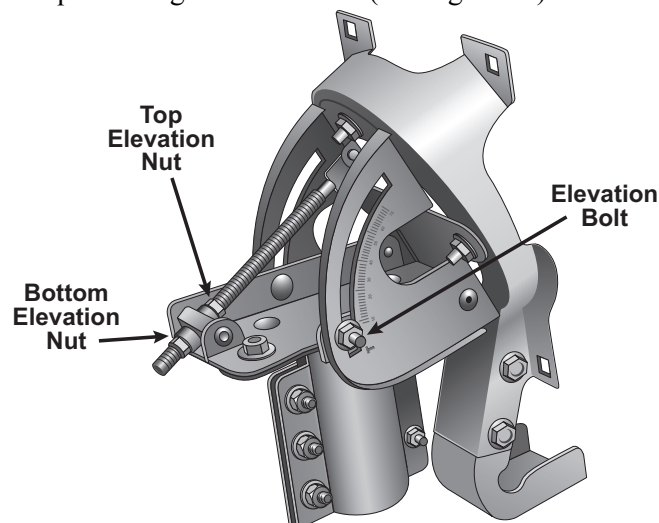


Figure 10. Fine tuning the elevation angle

- 7. Optional. Use only if connecting more than three receivers. Connect LNBF and switch.** Remove the temporary cable used for peaking the satellite reflector.

Eastern Arc—Connecting the DPP 1000.4 Eastern Arc LNBF to a DPP44 Switch

The DPP 1000.4 Eastern Arc LNBF can be connected to provide 61.5°W, 72.7°W, and 77°W satellite signals to a DISH Pro Plus 44 switch. Refer to the instructions provided with the switch for additional considerations and instructions. Signal for a fourth satellite location must be provided directly from the fourth satellite location's LNBF to the DPP switch (see Figure 11). The **LNBF IN** port on the DPP 1000.4 Eastern Arc LNBF must not be connected. In this installation, the DPP 1000.4 Eastern Arc LNBF defaults to the following settings:

PORT 1—77°W

PORT 2—72.7°W

PORT 3—61.5°W

LNBF IN—Disabled when DPP 1000.4 Eastern Arc LNBF is connected to a switch. When connected to a switch, any LNBF connected to the **LNBF IN** port must be disconnected from the DPP 1000.4 Eastern Arc LNBF and connected directly to that switch.

Note: The DPP 1000.4 Eastern Arc LNBF is NOT compatible with DISH Pro switches or the DISH Pro Plus 33 Switch in any installation.

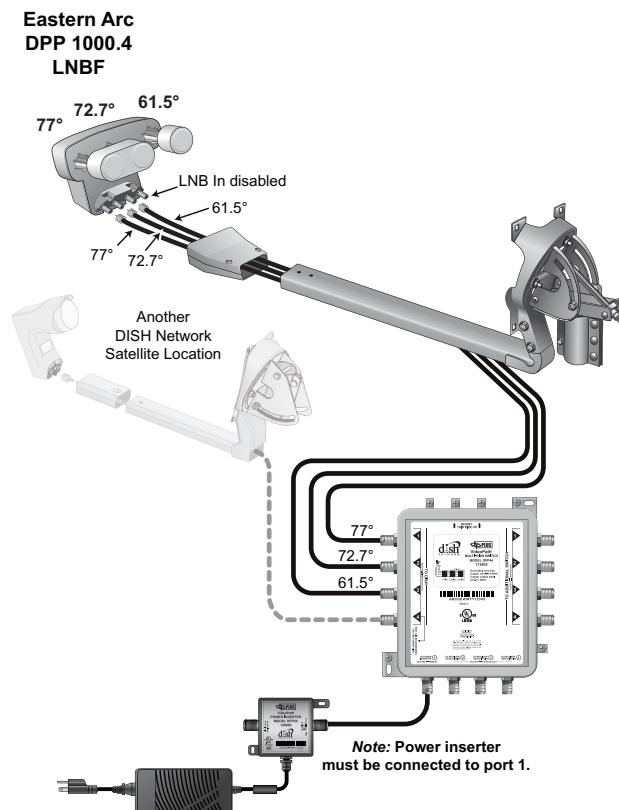


Figure 11. Eastern Arc DPP 1000.4 and DPP44 Switch Connection

Western Arc—Connecting the DPP 1000.4 Western Arc LNBF to a DPP44 Switch

Restrictions: If all the receivers are legacy receivers for a Western Arc DPP 1000.4, then you have to use a switch.

The DPP 1000.4 Western Arc LNBF can be connected to provide 119°W, 110°W, and 129°W satellite signals to a DISH Pro Plus 44 switch. Refer to the instructions provided with the switch for additional considerations and instructions. Signal for a fourth satellite location must be provided directly from the fourth satellite location's LNBF to the DPP switch. The **LNBF In** port on the DPP 1000.4 Western Arc LNBF must not be connected (see Figure 12). In this installation, the DPP 1000.4 Western Arc LNBF defaults to the following settings:

PORT 1—119°W

PORT 2—110°W

PORT 3—129°W

LNBF In—Disabled when DPP 1000.4 Western Arc LNBF is connected to a switch. When connected to a switch, any LNBF connected to the **LNBF In** port must be disconnected from the DPP 1000.4 Western Arc LNBF and connected directly to that switch.

Note: The DPP 1000.4 Western Arc LNBF is NOT compatible with DISH Pro switches or the DISH Pro Plus 33 switch in any installation.

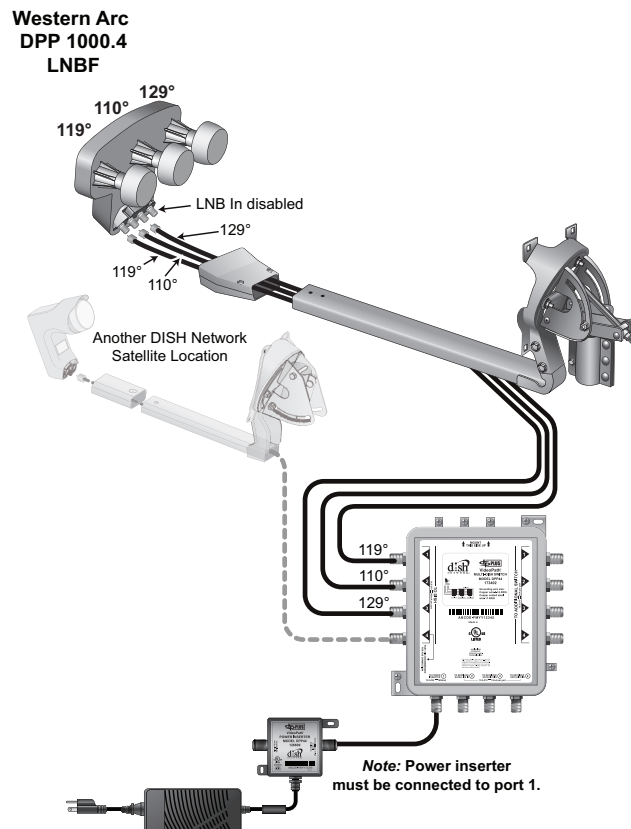


Figure 12. Western Arc DPP 1000.4 and DPP 44 Switch Connection

8. **Optional. Use this step only if there are more than three receivers. Connect switch and receiver.** Connect the cable(s) from the switch's **PORT 1** (or **PORT 2**, **PORT 3**, or **PORT 4**, as applicable) to a receiver's **SATELLITE IN** connection(s).



Tighten all indoor coaxial cable connections to the receiver only by hand. If you use a wrench, you may over-tighten the connections and damage your equipment.

9. **Connect TV and receiver.** Connect the receiver(s) to the TV(s) and display the **Point Dish** screen (if not displaying, for most receivers press **MENU-1-1** with factory software or with production software, press **MENU-6-1-1** on the remote control).

10. **Run Check Switch.** From the **Point Dish** screen, run **Check Switch**. When the **Check Switch** procedure finishes, you should see an **Installation Summary** screen similar to the ones shown in Figures 13 or 14. Make sure the summary screen shows reception from the satellites on all available satellite tuners.

Satellite Input 1						Satellite Input 2					
Port:	1	2	3	4		1	2	3	4		
Satellite:	77	72.7	61.5	X		77	72.7	61.5	X		
Trans:	OK	OK	OK	X		OK	OK	OK	X		
Device:	1K.4	1K.4	1K.4	N.C.		1K.4	1K.4	1K.4	N.C.		
Status:	Reception Verified					Reception Verified					
Switch:	DPP 1k.4 w/Separator					DPP 1k.4 w/Separator					

Buttons: Details, Test, Done, Help

Figure 13. EA 1000.4 Installation Summary

Satellite Input 1						Satellite Input 2					
Port:	1	2	3	4		1	2	3	4		
Satellite:	119	110	129	X		119	110	129	X		
Trans:	OK	OK	OK	X		OK	OK	OK	X		
Device:	WA.4	WA.4	WA.4	N.C.		WA.4	WA.4	WA.4	N.C.		
Status:	Reception Verified					Reception Verified					
Switch:	DPP WA.4 w/Separator					DPP WA.4 w/Separator					

Buttons: Details, Test, Done, Help

Figure 14. WA 1000.4 Installation Summary

The summary screen below (see Figure 15) is similar to what should be shown for a legacy receiver connected to the Western Arc DISH 1000.4. Eastern Arc does not support legacy receivers. Make sure the summary screen shows reception from 110°W, 119°W, and 129°W for Western Arc satellites on all available satellite tuners.

Note: Legacy receiver models 1000, 3000, and 4000 cannot receive signals and will not detect signal from the 129°W satellite locations. Select **3 SAT** or **4 SAT** for DISH 1000.4 on a legacy receiver.

Input:	1A-1	1B-1	2A-1	2B-1	3A-1	3B-1
Satellite:	129	129	119	119	110	110
Polarity:	Odd	Even	Odd	Even	Odd	Even

Status: Satellite reception verified

SuperDISH Installation: ☒ 3 Sat ☐ 4 Sat ☐ Full ☐ Alt.

Buttons: Cancel, Test, Help

Figure 15. Western Arc 1000.4 Legacy Installation Summary

11. **Verify signal strength bar is green and locked.** Exit the **Installation Summary** screen and display the **Point Dish** screen. Make sure the signal strength bar is green and locked for the satellites.
Note: You might not see signal from all satellites or proper LNBF identification until you take a software download and run a check switch in steps 12 and 13.
12. **Take a software download.** Exit the **Point Dish** screen and follow the onscreen instructions for taking a receiver software download. Do not disturb the receiver during the process of downloading software. If exiting the **Point Dish** screen does not start the download process, put the receiver into standby mode for at least 20 minutes (on most receivers) to allow the receiver to take a software download.
13. **Run Check Switch.** Run **Check Switch** again and confirm reception for the satellites (see Figures 13, 14, and 15).
14. **Install additional receivers.** If installing an additional receiver, follow steps 7-13, pages 10-13. Make sure the summary screen shows reception from the correct satellites.

Connecting a Second Satellite Reflector

After completing the previous sections to install the DISH 1000.4, use these instructions to add a fourth satellite location from a second satellite reflector to the DISH 1000.4. The LNBF from the second satellite reflector must be a DISH Pro Single, DISH Pro Dual, DISH Pro Dual Band, or a DISH Network bandstacked LNBF.

1. Install and peak the second satellite reflector using a peaking meter and the instructions that come with that satellite reflector. Skip any steps regarding taking a receiver software upgrade since this was done in the previous section of the DISH 1000.4 Installation Instructions.
2. Run cable from the second satellite reflector location to the DISH 1000.4 or the DPP44 switch, referring to the cable requirements stated in step 1 on page 7.
3. Connect the coaxial cable between the LNBF on the second satellite reflector and the **LNB IN** port on the DPP 1000.4 LNBF. Refer to Figure 1, page 2 or Figure 2, page 3.
4. From the **Point Dish** screen (accessed by pressing MENU-6-1-1 on most receivers), run **Check Switch** again on all connected receivers. When the **Check Switch** procedure finishes, you should see a summary screen similar to the summary screen below (see Figure 16). Make sure the summary screen shows reception from the 61.5°W, 72.7°W, and 77°W satellites for EA and reception from the 110°W, 119°W, and 129°W for WA and the fourth satellite location on all available satellite tuners. If there isn't reception, adjust the wing satellite reflector as needed to achieve the required signal levels. Confirm the installed LNBF on the second satellite reflector is correctly identified.

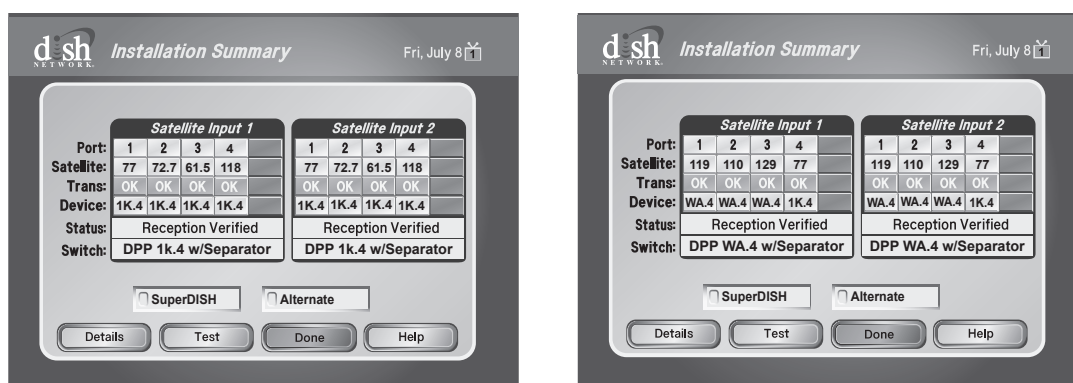


Figure 16. Installation Summary Screen for Eastern Arc and Western Arc

Eastern Arc Satellite Reflector Angles

Use the tables below as follows for Eastern Arc. **Note:** For Western Arc, go to page 21.

1. Find the ZIP code for your location.
2. Find the row that contains the ZIP code or the first three digits of the ZIP code. For example, the correct row for ZIP code 80112 is 801XX.
3. Write down the number in the AZ column in the “Azimuth” blank on page 4.
4. Write down the number in the EL column in the “Elevation” blank on page 4.
5. Write down the number in the SK column in the “Skew” blank on page 4.

ZIP Code	EL	AZ	SK
00008	9	91	60
00013	24	104	48
00019	23	104	49
00020	25	105	47
00022	21	100	47
00025	22	104	50
00028	23	104	48
00031	25	102	44
00032	26	104	44
00033	23	104	48
00034	20	102	49
00035	21	103	49
00037	21	101	48
00038	22	102	48
00039	21	101	48
00040	25	105	47
00044	24	104	47
00047	22	102	47
00048	22	102	47
00049	20	101	49
00050	20	101	48
00051	24	104	47
00052	24	104	47
00054	20	101	48
00055	21	101	48
00058	25	105	47
00065	23	104	48
00087	56	167	75
00097	59	164	73
00116	50	141	60
00119	51	144	61
00120	51	143	61
00124	48	143	62
00125	36	204	93
00126	38	201	92
00127	38	205	95
00128	38	199	92
00130	37	205	94

ZIP Code	EL	AZ	SK
00132	37	203	93
00133	38	201	92
00134	38	206	95
00135	37	203	93
00136	37	204	94
00137	36	206	94
00138	37	205	94
00139	38	200	92
00140	38	201	92
00141	38	205	94
00145	38	202	93
00147	38	201	92
00148	36	206	94
00151	38	206	95
00152	46	187	87
00155	46	185	86
00156	46	184	86
00157	45	184	86
00159	42	198	92
00160	32	157	75
00161	32	154	74
00164	30	146	71
00165	30	147	71
00166	31	147	71
00168	39	199	92
00169	39	199	92
00170	38	199	92
00172	39	199	91
00173	39	199	91
00174	39	199	91
00176	39	199	91
00177	39	199	91
00179	39	199	91
00180	39	199	91
00181	39	199	91
00182	39	199	91
00183	39	199	92
00184	39	199	92

ZIP Code	EL	AZ	SK
00185	39	199	91
00186	38	199	91
00187	38	199	92
00188	48	128	51
00189	48	129	51
00190	38	198	91
00191	38	198	91
00192	38	198	91
00195	17	100	53
00198	-2	77	62
00199	33	111	45
00200	33	110	44
00201	35	112	46
00203	27	105	45
00205	26	105	46
00206	27	104	44
00214	26	103	42
00215	26	103	42
00216	27	104	43
00217	26	105	46
00218	23	103	48
00219	34	124	57
00222	54	166	75
00223	58	165	74
00225	56	167	75
00226	59	165	74
00228	59	166	74
00229	55	165	74
00232	57	162	72
00234	58	166	75
00236	24	109	54
00238	49	144	62
00241	32	154	73
00243	51	149	65
00246	24	117	60
00250	35	120	52
00252	37	118	49
00255	41	133	58

ZIP Code	EL	AZ	SK
00257	18	101	51
00258	20	103	52
00259	20	103	50
00260	19	102	53
00266	29	115	53
00267	17	104	57
00268	20	105	55
00270	19	104	54
00276	26	117	58
00277	18	104	57
00278	19	103	52
00279	26	116	58
00280	24	104	48
00281	28	115	55
00282	28	116	55
00283	41	176	81
00284	38	197	90
00285	43	191	89
00286	49	180	83
00401	42	191	89
00501	43	193	90
00544	43	193	90
006XX	67	211	108
007XX	67	211	108
008XX	67	217	113
009XX	67	212	109
010XX	41	195	90
011XX	41	195	90
012XX	41	193	89
013XX	41	195	90
014XX	41	196	91
015XX	41	196	91
016XX	41	196	91
017XX	41	198	91
018XX	41	198	92
019XX	41	199	92
020XX	41	198	92
021XX	41	198	92

ZIP Code	EL	AZ	SK
022XX	41	198	92
023XX	41	199	92
024XX	41	198	92
025XX	42	199	92
026XX	42	200	93
027XX	42	197	92
028XX	42	197	91
029XX	42	197	91
030XX	41	198	91
031XX	40	198	91
032XX	40	197	91
033XX	40	198	91
034XX	40	196	91
035XX	39	199	91
036XX	40	196	90
037XX	40	197	91
038XX	40	198	92
039XX	40	199	92
040XX	40	200	92
041XX	40	201	93
042XX	39	200	92
043XX	39	202	93
044XX	38	205	94
045XX	39	201	93
046XX	38	206	95
047XX	36	206	94
048XX	39	203	94
049XX	38	202	93
050XX	39	196	90
051XX	40	195	90
052XX	40	194	90
053XX	40	195	90
054XX	39	196	90
055XX	41	198	92
056XX	39	196	90
057XX	40	194	90
058XX	39	197	91
059XX	38	198	91
060XX	42	194	90
061XX	42	194	90
062XX	42	196	91
063XX	42	196	91
064XX	42	194	90
065XX	42	194	90
066XX	42	193	89

ZIP Code	EL	AZ	SK
067XX	42	193	89
068XX	42	192	89
069XX	43	192	89
070XX	43	191	88
071XX	43	191	88
072XX	43	191	88
073XX	43	191	88
074XX	43	191	88
075XX	43	191	88
076XX	43	191	88
077XX	43	191	88
078XX	43	189	88
079XX	43	190	88
080XX	44	188	87
081XX	44	188	87
082XX	44	189	88
083XX	44	188	87
084XX	44	189	88
085XX	43	189	88
086XX	43	189	88
087XX	44	190	88
088XX	43	189	88
089XX	43	189	88
100XX	43	191	89
101XX	43	191	89
102XX	43	191	88
103XX	43	191	88
104XX	43	191	89
105XX	42	191	89
106XX	43	191	89
107XX	43	191	89
108XX	43	191	89
109XX	42	194	88
110XX	43	191	89
111XX	43	191	89
112XX	43	191	89
113XX	43	191	89
114XX	43	191	89
115XX	43	192	89
116XX	43	191	89
117XX	43	192	89
118XX	43	192	89
119XX	43	194	90
120XX	41	192	89
121XX	41	192	89

ZIP Code	EL	AZ	SK
122XX	41	192	89
123XX	41	192	89
124XX	41	191	88
125XX	42	192	89
126XX	42	191	89
127XX	42	190	88
128XX	40	193	89
129XX	39	193	89
130XX	40	187	86
131XX	40	187	86
132XX	40	187	86
133XX	40	189	87
134XX	40	189	87
135XX	40	189	87
136XX	39	190	87
137XX	41	188	87
138XX	41	188	87
139XX	41	187	86
140XX	40	181	84
141XX	40	181	84
142XX	40	181	83
143XX	40	181	83
144XX	40	184	85
145XX	40	184	85
146XX	40	184	85
147XX	41	181	83
148XX	41	184	85
149XX	41	185	85
150XX	43	177	81
151XX	43	177	82
152XX	43	177	82
153XX	43	176	81
154XX	43	177	82
155XX	43	179	83
156XX	43	178	82
157XX	42	179	83
158XX	42	180	83
159XX	43	180	83
160XX	42	177	82
161XX	42	176	81
162XX	42	179	82
163XX	41	179	82
164XX	41	177	82
165XX	41	177	82
166XX	43	180	83

ZIP Code	EL	AZ	SK
167XX	41	181	84
168XX	42	182	84
169XX	41	184	85
170XX	43	183	85
171XX	43	184	85
172XX	43	182	84
173XX	44	183	85
174XX	44	184	85
175XX	44	186	86
176XX	44	185	86
177XX	42	184	85
178XX	43	185	85
179XX	43	186	86
180XX	43	188	87
181XX	43	188	87
182XX	43	187	86
183XX	42	188	87
184XX	42	188	87
185XX	42	188	87
186XX	42	187	86
187XX	42	187	86
188XX	42	187	86
189XX	43	188	87
190XX	44	188	87
191XX	44	188	87
192XX	44	188	87
193XX	44	186	86
194XX	43	188	87
195XX	43	186	86
196XX	43	186	86
197XX	44	186	86
198XX	44	187	87
199XX	45	187	87
200XX	45	183	85
201XX	45	182	84
202XX	45	183	85
203XX	45	183	85
204XX	45	183	85
205XX	45	183	85
206XX	45	184	85
207XX	45	183	85
208XX	44	183	85
209XX	45	183	85
210XX	44	184	85
211XX	44	184	85

ZIP Code	EL	AZ	SK
212XX	44	184	85
214XX	45	184	85
215XX	44	179	82
216XX	45	186	86
217XX	44	183	84
218XX	46	186	86
219XX	44	186	86
220XX	45	182	84
221XX	45	182	84
222XX	45	183	85
223XX	45	183	85
224XX	46	183	85
225XX	46	183	85
226XX	44	180	83
227XX	45	180	83
228XX	45	178	82
229XX	46	179	83
230XX	46	182	84
231XX	46	182	84
232XX	46	181	84
233XX	47	185	86
234XX	47	185	86
235XX	47	184	85
236XX	47	184	85
237XX	47	184	85
238XX	47	181	84
239XX	47	179	82
240XX	46	175	80
241XX	46	175	80
242XX	46	169	77
243XX	46	172	79
244XX	45	177	82
245XX	46	176	82
246XX	46	170	78
247XX	46	172	79
248XX	46	172	79
249XX	45	175	80
250XX	45	172	79
251XX	45	172	79
252XX	44	172	79
253XX	45	172	79
254XX	44	181	84
255XX	45	170	78
256XX	45	170	78
257XX	44	170	78

ZIP Code	EL	AZ	SK
258XX	45	172	79
259XX	45	173	79
260XX	43	175	81
261XX	44	173	80
262XX	44	175	81
263XX	44	175	80
264XX	44	175	81
265XX	44	176	81
266XX	45	174	80
267XX	44	178	82
268XX	44	178	82
270XX	47	173	80
271XX	47	173	80
272XX	48	175	80
273XX	48	175	81
274XX	47	175	80
275XX	48	177	82
276XX	48	177	82
277XX	48	176	82
278XX	48	180	84
279XX	48	183	85
280XX	48	171	78
281XX	48	172	79
282XX	48	171	79
283XX	49	176	81
284XX	50	177	82
285XX	49	180	84
286XX	47	170	78
287XX	47	167	76
288XX	47	167	77
289XX	48	164	74
290XX	50	171	78
291XX	50	171	78
292XX	49	170	78
293XX	48	169	77
294XX	51	172	79
295XX	50	174	80
296XX	48	167	76
297XX	49	171	78
298XX	50	168	77
299XX	51	170	77
300XX	49	162	73
301XX	48	161	73
302XX	49	161	73
303XX	49	162	73

ZIP Code	EL	AZ	SK
304XX	51	167	76
305XX	48	164	74
306XX	49	165	75
307XX	48	161	73
308XX	50	167	76
309XX	50	167	76
310XX	50	164	74
311XX	49	162	73
312XX	50	163	74
313XX	52	168	76
314XX	52	168	77
315XX	52	165	75
316XX	52	163	73
317XX	51	161	72
318XX	50	160	72
319XX	50	160	72
320XX	53	165	74
321XX	54	166	75
322XX	53	167	75
323XX	52	160	71
324XX	52	157	69
325XX	51	153	67
326XX	54	164	73
327XX	55	166	75
328XX	55	166	75
329XX	56	168	76
330XX	59	166	74
331XX	59	167	75
332XX	59	166	75
333XX	58	167	75
334XX	58	168	75
335XX	56	163	73
336XX	56	162	72
337XX	56	161	72
338XX	56	164	73
339XX	57	163	72
342XX	56	161	72
344XX	55	164	73
346XX	55	162	72
347XX	55	165	74
349XX	57	168	75
350XX	48	156	70
351XX	48	156	70
352XX	48	156	70
354XX	48	154	68

ZIP Code	EL	AZ	SK
355XX	47	154	69
356XX	47	155	70
357XX	47	158	71
358XX	47	157	71
359XX	48	158	71
360XX	50	157	70
361XX	50	156	70
362XX	49	158	71
363XX	51	157	70
364XX	50	154	68
365XX	50	151	66
366XX	50	151	66
367XX	49	154	68
368XX	50	158	71
369XX	49	151	67
370XX	45	158	71
371XX	46	158	72
372XX	45	158	72
373XX	47	161	73
374XX	47	161	73
375XX	45	150	67
376XX	47	169	77
377XX	46	164	75
378XX	46	165	75
379XX	47	164	75
380XX	45	152	68
381XX	45	150	67
382XX	45	153	69
383XX	45	153	69
384XX	46	156	70
385XX	46	161	73
386XX	46	149	67
387XX	46	147	65
388XX	47	152	68
389XX	47	149	66
390XX	48	148	65
391XX	48	147	65
392XX	48	147	65
393XX	48	151	66
394XX	49	148	65
395XX	50	148	64
396XX	49	146	63
397XX	47	151	67
399XX	49	162	73
400XX	44	163	74

ZIP Code	EL	AZ	SK
401XX	44	161	73
402XX	44	162	74
403XX	44	165	76
404XX	45	164	75
405XX	44	164	75
406XX	44	164	75
407XX	45	164	75
408XX	46	167	76
409XX	46	166	76
410XX	43	166	76
411XX	44	169	77
412XX	45	169	77
413XX	45	167	76
414XX	45	167	77
415XX	45	169	78
416XX	45	169	77
417XX	45	167	76
418XX	46	167	77
420XX	44	155	70
421XX	45	160	73
422XX	45	158	72
423XX	44	158	72
424XX	44	156	71
425XX	45	164	75
426XX	45	163	74
427XX	45	161	73
430XX	42	169	78
431XX	43	169	78
432XX	43	169	78
433XX	42	169	78
434XX	41	171	78
435XX	41	168	77
436XX	41	169	78
437XX	43	172	79
438XX	42	172	79
439XX	43	174	80
440XX	41	174	80
441XX	41	174	80
442XX	42	174	80
443XX	42	174	80
444XX	42	175	81
445XX	42	176	81
446XX	42	174	80
447XX	42	174	80
448XX	41	171	79

ZIP Code	EL	AZ	SK
449XX	42	171	79
450XX	43	166	76
451XX	43	167	77
452XX	43	166	76
453XX	42	166	77
454XX	42	166	77
455XX	42	167	77
456XX	44	169	78
457XX	43	172	79
458XX	41	167	77
459XX	43	165	76
460XX	42	162	75
461XX	42	161	74
462XX	42	162	74
463XX	40	161	74
464XX	40	161	74
465XX	40	163	75
466XX	40	163	75
467XX	41	164	76
468XX	41	164	76
469XX	41	163	75
470XX	43	164	75
471XX	43	161	74
472XX	43	162	74
473XX	42	164	76
474XX	43	160	73
475XX	43	159	73
476XX	43	158	72
477XX	43	158	72
478XX	42	159	73
479XX	41	160	74
480XX	40	171	79
481XX	40	169	78
482XX	40	171	79
483XX	40	171	79
484XX	39	171	79
485XX	39	170	78
486XX	38	169	78
487XX	38	171	79
488XX	39	168	77
489XX	39	168	77
490XX	40	165	76
491XX	40	163	75
492XX	40	168	77
493XX	38	166	77

ZIP Code	EL	AZ	SK
494XX	38	164	76
495XX	39	165	76
496XX	37	166	77
497XX	36	170	79
498XX	35	163	76
499XX	34	160	75
500XX	37	146	68
501XX	37	146	68
502XX	37	146	68
503XX	37	146	68
504XX	36	148	69
505XX	36	146	68
506XX	37	149	70
507XX	37	150	70
508XX	38	144	67
509XX	37	146	68
510XX	35	142	67
511XX	35	141	66
512XX	35	142	67
513XX	35	144	68
514XX	36	143	67
515XX	37	143	66
516XX	37	142	66
520XX	38	153	71
521XX	37	151	71
522XX	38	151	70
523XX	38	151	70
524XX	38	151	70
525XX	39	148	69
526XX	39	151	70
527XX	38	153	71
528XX	39	153	71
530XX	37	159	74
531XX	38	159	74
532XX	38	159	74
534XX	38	160	74
535XX	38	156	73
537XX	38	156	73
538XX	37	153	72
539XX	37	156	73
540XX	34	151	71
541XX	36	160	75
542XX	37	161	75
543XX	36	161	75
544XX	36	156	74

ZIP Code	EL	AZ	SK
545XX	34	157	74
546XX	36	154	72
547XX	35	153	72
548XX	34	154	73
549XX	37	158	74
550XX	34	149	71
551XX	34	149	71
553XX	34	147	70
554XX	34	149	71
555XX	34	147	70
556XX	33	156	74
557XX	32	152	72
558XX	33	152	73
559XX	36	151	71
560XX	35	147	69
561XX	34	144	68
562XX	33	144	69
563XX	33	147	70
564XX	32	147	71
565XX	31	143	70
566XX	31	148	71
567XX	30	144	70
570XX	34	141	67
571XX	34	141	67
572XX	33	141	68
573XX	33	138	66
574XX	32	138	67
575XX	32	134	64
576XX	30	132	65
577XX	31	129	62
580XX	31	141	69
581XX	31	142	69
582XX	30	141	69
583XX	29	138	68
584XX	30	138	67
585XX	30	134	66
586XX	29	130	65
587XX	28	134	67
588XX	27	129	65
590XX	27	121	60
591XX	27	121	60
592XX	26	126	64
593XX	28	125	63
594XX	24	117	60
595XX	24	119	62

ZIP Code	EL	AZ	SK
596XX	24	116	59
597XX	25	115	58
598XX	23	112	58
599XX	22	112	59
600XX	39	159	74
601XX	39	158	73
602XX	39	159	74
603XX	39	159	74
604XX	40	159	73
605XX	39	158	73
606XX	39	159	74
607XX	39	159	74
609XX	40	158	73
610XX	38	156	72
611XX	38	156	73
612XX	39	153	71
613XX	39	156	72
614XX	39	153	71
615XX	40	154	71
616XX	40	155	71
617XX	40	156	72
618XX	41	158	72
619XX	41	157	72
620XX	41	153	70
622XX	42	153	70
623XX	40	151	69
624XX	42	156	72
625XX	41	155	71
626XX	41	153	70
627XX	41	154	71
628XX	43	155	71
629XX	43	154	70
630XX	42	150	69
631XX	42	152	69
633XX	41	150	69
634XX	40	149	69
635XX	39	148	68
636XX	42	150	68
637XX	43	152	69
638XX	44	152	68
639XX	43	150	68
640XX	40	144	66
641XX	39	143	65
644XX	38	143	66
645XX	39	143	66

ZIP Code	EL	AZ	SK
646XX	39	145	67
647XX	40	142	65
648XX	41	142	64
649XX	39	142	65
650XX	41	147	67
651XX	41	147	67
652XX	40	147	68
653XX	40	145	66
654XX	42	147	67
655XX	42	147	67
656XX	42	144	65
657XX	42	144	65
658XX	42	144	65
660XX	39	142	65
661XX	39	142	65
662XX	39	142	65
664XX	38	140	64
665XX	38	140	64
666XX	39	141	64
667XX	40	141	64
668XX	39	139	63
669XX	37	137	63
670XX	39	136	61
671XX	39	136	61
672XX	39	136	62
673XX	41	139	63
674XX	38	136	62
675XX	38	134	61
676XX	37	134	61
677XX	36	131	60
678XX	37	130	59
679XX	37	129	58
680XX	36	140	66
681XX	37	141	66
683XX	37	139	64
684XX	37	140	65
685XX	37	140	65
686XX	36	138	65
687XX	35	138	65
688XX	35	135	63
689XX	36	135	63
690XX	35	131	61
691XX	34	131	61
692XX	33	133	63
693XX	32	128	61

ZIP Code	EL	AZ	SK
700XX	50	146	62
701XX	50	146	63
703XX	50	144	61
704XX	50	146	63
705XX	49	141	60
706XX	48	140	59
707XX	49	144	62
708XX	49	144	62
710XX	46	141	61
711XX	46	140	61
712XX	47	144	63
713XX	48	142	61
714XX	47	141	61
716XX	46	145	64
717XX	45	142	63
718XX	45	141	62
719XX	44	142	63
720XX	44	146	65
721XX	44	145	65
722XX	45	145	64
723XX	45	149	67
724XX	44	149	67
725XX	44	147	66
726XX	43	144	65
727XX	42	141	63
728XX	43	143	63
729XX	43	141	63
730XX	41	134	59
731XX	41	134	59
733XX	45	130	54
734XX	43	135	59
735XX	41	132	57
736XX	40	131	58
737XX	40	134	60
738XX	39	132	59
739XX	38	128	57
740XX	41	138	61
741XX	41	138	62
743XX	42	140	63
744XX	42	139	62
745XX	43	137	61
746XX	40	137	61
747XX	43	137	60
748XX	42	136	60
749XX	43	140	62

ZIP Code	EL	AZ	SK
750XX	44	135	58
751XX	44	135	58
752XX	44	134	58
753XX	44	134	58
754XX	44	136	59
755XX	45	139	61
756XX	45	138	60
757XX	45	136	59
758XX	46	135	57
759XX	47	138	59
760XX	44	133	57
761XX	44	133	57
762XX	43	133	58
763XX	42	132	57
764XX	43	131	56
765XX	45	132	55
766XX	45	133	56
767XX	45	132	56
768XX	43	129	54
769XX	43	127	53
770XX	47	134	56
772XX	47	134	56
773XX	47	135	57
774XX	47	133	55
775XX	48	135	56
776XX	48	137	58
777XX	48	137	58
778XX	46	133	56
779XX	47	130	53
780XX	46	128	52
781XX	46	129	53
782XX	46	129	52
783XX	47	128	51
784XX	48	129	52
785XX	48	126	49
786XX	45	130	54
787XX	45	130	54
788XX	44	125	51
789XX	46	132	55
790XX	39	127	56
791XX	39	127	55
792XX	40	129	56
793XX	40	125	53
794XX	40	126	54
795XX	42	128	54

ZIP Code	EL	AZ	SK
796XX	42	128	54
797XX	41	124	51
798XX	40	120	48
799XX	38	118	48
800XX	33	124	57
801XX	34	124	57
802XX	33	124	57
803XX	33	124	57
804XX	33	122	57
805XX	33	125	58
806XX	33	125	58
807XX	34	128	59
808XX	34	126	57
809XX	34	124	57
810XX	35	125	56
811XX	34	122	54
812XX	34	122	55
813XX	33	118	53
814XX	32	119	54
815XX	32	118	54
816XX	32	121	56
820XX	32	125	59
821XX	26	117	58
822XX	31	126	60
823XX	30	121	58
824XX	28	120	59
825XX	28	119	58
826XX	30	123	59
827XX	30	126	61
828XX	28	123	60
829XX	29	117	56
830XX	27	117	57
831XX	28	117	56
832XX	27	114	56
833XX	25	111	54
834XX	26	115	57
835XX	22	109	57
836XX	23	109	54
837XX	24	109	54
838XX	21	110	58
840XX	29	115	54
841XX	28	115	54
842XX	28	114	54
843XX	28	114	55
844XX	28	114	54

ZIP Code	EL	AZ	SK
845XX	31	116	53
846XX	29	114	53
847XX	30	112	50
850XX	33	112	46
852XX	33	112	46
853XX	32	110	46
855XX	34	114	47
856XX	35	112	45
857XX	34	112	46
859XX	34	115	48
860XX	32	113	49
863XX	32	112	47
864XX	30	110	47
865XX	33	116	50
870XX	36	119	51
871XX	36	120	52
872XX	36	120	52
873XX	34	117	51
874XX	34	118	52
875XX	35	121	53
877XX	36	122	54
878XX	36	118	50
879XX	37	117	49
880XX	37	117	48
881XX	38	123	53
882XX	39	122	51
883XX	38	120	50
884XX	37	124	54
885XX	38	118	48
889XX	29	109	47
890XX	28	109	48
891XX	29	109	47
893XX	27	109	50
894XX	24	105	49
895XX	24	105	48
897XX	24	104	48
898XX	26	109	52
900XX	28	105	43
902XX	28	105	43
903XX	28	105	43
904XX	28	105	43
905XX	28	105	43
906XX	28	105	43
907XX	28	105	43
908XX	28	105	43

ZIP Code	EL	AZ	SK
910XX	28	105	44
911XX	28	105	44
912XX	28	105	44
913XX	27	105	43
914XX	28	105	43
915XX	28	105	44
916XX	28	105	43
917XX	28	105	44
918XX	28	105	44
919XX	30	106	43
920XX	29	106	43
921XX	29	106	43
922XX	30	107	44
923XX	29	106	45
924XX	28	106	44
925XX	29	105	44
926XX	28	105	43
927XX	28	105	43
928XX	28	105	43
930XX	27	104	43
931XX	26	104	43
932XX	26	104	45
933XX	27	105	44
934XX	25	103	44
935XX	27	106	45
936XX	25	104	46
937XX	25	104	46
938XX	25	104	46
939XX	24	102	44
940XX	23	101	45
941XX	23	101	45
942XX	23	103	47
943XX	23	101	45
944XX	23	101	45
945XX	23	102	46
946XX	23	102	46
947XX	23	102	46
948XX	23	102	46
949XX	22	101	46
950XX	23	102	45
951XX	23	102	45
952XX	24	103	46
953XX	24	103	46
954XX	22	101	46
955XX	20	101	48

ZIP Code	EL	AZ	SK
956XX	23	103	47
957XX	23	103	47
958XX	23	103	47
959XX	23	103	48
960XX	21	102	49
961XX	23	104	49
970XX	19	102	53
971XX	18	101	53
972XX	19	102	53
973XX	19	101	52
974XX	19	101	51
975XX	20	101	50
976XX	21	104	51
977XX	21	104	52
978XX	21	106	54
979XX	23	108	54
980XX	18	102	55
981XX	18	102	55
982XX	17	102	56
983XX	18	102	55
984XX	18	102	55
985XX	17	101	54
986XX	18	102	54
988XX	19	105	56
989XX	19	104	55
990XX	20	108	57
991XX	20	107	57
992XX	20	108	57
993XX	20	106	55
994XX	22	108	56
998XX	6	87	61
999XX	8	90	60

Western Arc Satellite Reflector Angles

Use the tables below as follows for Western Arc. **Note:** For Eastern Arc, go to page 15.

1. Find the ZIP code for your location.
2. Find the row that contains the ZIP code or the first three digits of the ZIP code. For example, the correct row for ZIP code 80112 is 801XX.
3. Write down the number in the AZ column in the “Azimuth” blank on page 4.
4. Write down the number in the EL column in the “Elevation” blank on page 4.
5. Write down the number in the SK column in the “Skew” blank on page 4.

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
00001	118	15	71	00058	165	45	90	00161	214	28	113	00206	167	48	90
00002	121	12	78	00065	162	43	88	00164	205	29	109	00214	165	49	89
00003	118	17	69	00087	243	36	139	00165	207	29	110	00215	165	49	89
00004	121	16	73	00097	243	38	142	00166	207	29	110	00216	166	49	90
00006	122	15	76	00116	221	44	128	00168	255	20	127	00217	167	47	91
00007	117	9	78	00119	224	43	130	00169	255	20	127	00218	161	43	88
00008	141	26	83	00120	224	43	130	00170	254	20	126	00219	191	42	107
00010	116	11	71	00124	221	42	127	00172	255	20	127	00222	240	36	137
00011	122	17	74	00125	257	17	125	00173	255	20	127	00223	243	37	141
00013	163	44	89	00126	256	19	126	00174	255	20	127	00225	243	36	139
00019	162	42	89	00127	259	18	128	00176	255	20	127	00226	244	38	142
00020	165	45	90	00128	254	19	126	00177	255	20	127	00228	244	37	142
00022	157	43	85	00130	258	18	127	00179	255	20	127	00229	240	36	137
00025	161	41	89	00132	257	18	126	00180	255	20	127	00232	240	38	139
00028	161	43	88	00133	256	19	126	00181	254	20	127	00234	244	37	141
00031	163	47	88	00134	259	18	128	00182	254	20	127	00236	168	39	93
00032	165	48	89	00135	257	18	126	00183	255	20	127	00238	222	42	128
00033	163	43	89	00136	258	18	126	00184	255	20	127	00241	213	28	112
00034	157	41	86	00137	259	17	126	00185	254	20	127	00243	227	41	130
00035	160	41	88	00138	259	17	127	00186	254	20	126	00246	175	34	97
00037	158	42	86	00139	255	19	127	00187	254	20	126	00250	190	45	107
00038	160	42	87	00140	256	19	127	00188	213	49	125	00252	191	48	108
00039	157	42	86	00141	259	18	127	00189	213	49	124	00255	206	43	116
00040	165	45	90	00145	256	19	127	00190	254	20	126	00257	156	38	86
00044	163	44	90	00147	256	19	127	00191	254	20	126	00258	158	38	87
00047	160	43	87	00148	259	17	126	00192	254	20	126	00259	159	40	87
00048	159	43	86	00151	260	17	128	00195	154	36	86	00260	158	37	88
00049	157	41	85	00152	248	26	131	00198	122	16	75	00266	178	42	99
00050	157	41	85	00155	246	27	131	00199	180	50	100	00267	158	33	88
00051	163	44	89	00156	246	27	130	00200	179	51	100	00268	161	36	90
00052	163	44	89	00157	246	27	130	00201	183	50	103	00270	159	36	89
00054	157	41	85	00159	254	21	130	00203	167	47	91	00276	177	37	98
00055	157	41	86	00160	216	28	113	00205	166	46	91	00277	159	33	89

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
00278	158	38	87	033XX	254	21	128	072XX	250	24	129	121XX	250	23	127
00279	177	37	98	034XX	252	21	128	073XX	250	24	129	122XX	250	23	127
00280	163	44	89	035XX	254	20	127	074XX	249	24	129	123XX	250	23	127
00281	177	40	99	036XX	252	21	128	075XX	250	24	129	124XX	249	23	128
00282	178	40	99	037XX	253	21	127	076XX	250	24	129	125XX	250	23	128
00283	238	27	125	038XX	254	20	128	077XX	250	24	129	126XX	249	23	128
00284	252	20	126	039XX	255	20	128	078XX	248	24	129	127XX	249	24	128
00285	250	24	129	040XX	255	20	128	079XX	249	24	129	128XX	250	22	127
00286	245	30	133	041XX	256	20	128	080XX	248	25	130	129XX	250	22	125
00401	250	24	129	042XX	255	20	127	081XX	248	25	129	130XX	246	24	126
00501	252	23	130	043XX	257	19	128	082XX	249	25	130	131XX	245	24	126
00544	252	23	130	044XX	259	18	127	083XX	248	25	130	132XX	246	24	126
006XX	268	27	157	045XX	256	19	128	084XX	249	25	130	133XX	247	23	126
007XX	268	27	157	046XX	259	18	128	085XX	248	25	129	134XX	247	23	126
008XX	270	26	158	047XX	259	17	126	086XX	248	25	129	135XX	247	23	126
009XX	268	27	157	048XX	258	19	128	087XX	249	24	130	136XX	248	23	125
010XX	252	22	128	049XX	257	19	127	088XX	248	24	129	137XX	247	24	127
011XX	252	22	128	050XX	253	21	127	089XX	248	24	129	138XX	246	24	127
012XX	251	22	128	051XX	252	22	127	100XX	250	24	129	139XX	246	24	127
013XX	252	22	128	052XX	251	22	127	101XX	250	24	129	140XX	241	26	125
014XX	253	21	128	053XX	252	22	128	102XX	250	24	129	141XX	241	26	125
015XX	253	22	129	054XX	252	21	126	103XX	250	24	129	142XX	241	26	125
016XX	253	22	129	055XX	254	21	129	104XX	250	24	129	143XX	241	26	124
017XX	254	21	129	056XX	252	21	126	105XX	250	23	129	144XX	243	25	125
018XX	254	21	129	057XX	251	22	127	106XX	250	24	129	145XX	243	25	125
019XX	255	21	129	058XX	253	20	126	107XX	250	24	129	146XX	243	25	125
020XX	255	21	129	059XX	254	20	126	108XX	250	24	129	147XX	241	26	125
021XX	255	21	129	060XX	251	22	129	109XX	252	24	129	148XX	244	25	126
022XX	255	21	129	061XX	251	22	129	110XX	250	24	129	149XX	244	25	126
023XX	255	21	129	062XX	253	22	129	111XX	250	24	129	150XX	239	28	126
024XX	255	21	129	063XX	253	22	129	112XX	250	24	129	151XX	239	28	126
025XX	255	21	130	064XX	252	23	129	113XX	250	24	129	152XX	239	28	126
026XX	256	21	130	065XX	251	23	129	114XX	250	24	129	153XX	239	28	126
027XX	254	21	129	066XX	251	23	129	115XX	250	24	129	154XX	240	28	127
028XX	254	22	129	067XX	251	23	129	116XX	250	24	129	155XX	241	28	127
029XX	254	22	129	068XX	251	23	129	117XX	250	23	129	156XX	240	28	127
030XX	254	21	128	069XX	250	23	129	118XX	250	24	129	157XX	241	27	126
031XX	254	21	128	070XX	250	24	129	119XX	252	23	130	158XX	241	27	126
032XX	254	21	127	071XX	250	24	129	120XX	250	23	127	159XX	241	27	127

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
160XX	239	28	126	199XX	247	26	130	239XX	243	29	130	279XX	246	28	133
161XX	238	28	125	200XX	245	27	129	240XX	240	30	129	280XX	238	32	131
162XX	240	27	126	201XX	244	27	129	241XX	240	30	129	281XX	239	32	131
163XX	240	27	125	202XX	245	27	129	242XX	236	32	128	282XX	238	32	131
164XX	238	27	125	203XX	245	27	129	243XX	238	31	129	283XX	242	31	132
165XX	238	27	125	204XX	245	27	129	244XX	241	29	129	284XX	244	31	133
166XX	242	27	127	205XX	245	27	129	245XX	241	30	130	285XX	245	29	133
167XX	242	26	126	206XX	245	27	130	246XX	236	31	128	286XX	237	32	130
168XX	243	26	127	207XX	245	27	129	247XX	238	31	128	287XX	235	33	129
169XX	244	25	126	208XX	245	27	129	248XX	237	31	128	288XX	235	33	129
170XX	244	26	128	209XX	245	27	129	249XX	239	30	128	289XX	233	34	129
171XX	244	26	128	210XX	245	26	129	250XX	237	30	127	290XX	239	33	132
172XX	244	27	128	211XX	245	26	129	251XX	237	30	127	291XX	239	33	132
173XX	244	26	128	212XX	245	26	129	252XX	237	30	127	292XX	239	33	132
174XX	245	26	128	214XX	245	27	130	253XX	237	30	127	293XX	237	33	130
175XX	246	26	129	215XX	242	28	128	254XX	243	27	128	294XX	241	33	134
176XX	246	26	129	216XX	247	26	130	255XX	235	31	127	295XX	242	32	133
177XX	245	26	127	217XX	244	27	129	256XX	236	31	127	296XX	236	34	130
178XX	245	26	128	218XX	248	26	131	257XX	235	31	127	297XX	238	32	131
179XX	246	25	128	219XX	247	26	129	258XX	237	31	128	298XX	238	34	132
180XX	247	25	128	220XX	244	27	129	259XX	238	30	128	299XX	240	34	134
181XX	247	25	129	221XX	244	27	129	260XX	238	29	126	300XX	233	35	130
182XX	247	25	128	222XX	245	27	129	261XX	237	30	127	301XX	232	36	129
183XX	247	24	128	223XX	245	27	129	262XX	239	29	128	302XX	233	36	130
184XX	247	24	128	224XX	245	28	130	263XX	238	29	127	303XX	233	35	130
185XX	247	25	128	225XX	245	28	130	264XX	238	29	127	304XX	238	35	133
186XX	247	25	128	226XX	243	28	129	265XX	239	29	127	305XX	234	34	130
187XX	247	25	128	227XX	243	28	129	266XX	238	30	128	306XX	235	35	131
188XX	246	25	127	228XX	241	28	129	267XX	241	28	128	307XX	231	35	128
189XX	248	25	129	229XX	242	29	129	268XX	241	28	128	308XX	237	34	132
190XX	248	25	129	230XX	245	28	131	270XX	239	31	130	309XX	237	34	132
191XX	248	25	129	231XX	245	28	131	271XX	239	31	130	310XX	235	36	132
192XX	248	25	129	232XX	244	28	130	272XX	241	31	131	311XX	233	35	130
193XX	247	26	129	233XX	247	27	131	273XX	241	31	131	312XX	235	35	131
194XX	248	25	129	234XX	247	27	132	274XX	241	31	131	313XX	239	34	134
195XX	246	25	128	235XX	247	28	132	275XX	242	30	132	314XX	239	34	134
196XX	246	25	129	236XX	246	28	132	276XX	242	30	132	315XX	238	35	134
197XX	247	26	129	237XX	247	28	132	277XX	242	30	131	316XX	237	36	134
198XX	247	26	129	238XX	245	28	131	278XX	244	29	132	317XX	235	37	133

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
318XX	233	36	131	363XX	232	38	132	402XX	228	33	125	444XX	237	28	125
319XX	233	37	131	364XX	229	39	130	403XX	232	32	126	445XX	238	28	125
320XX	239	36	135	365XX	228	40	130	404XX	231	33	126	446XX	237	29	125
321XX	240	36	137	366XX	228	40	130	405XX	231	32	126	447XX	237	29	125
322XX	240	36	136	367XX	228	38	129	406XX	230	33	125	448XX	234	29	124
323XX	235	38	134	368XX	232	37	130	407XX	232	33	127	449XX	234	29	124
324XX	233	38	133	369XX	227	39	129	408XX	234	32	128	450XX	231	31	124
325XX	230	40	131	370XX	227	35	126	409XX	233	33	127	451XX	232	31	125
326XX	239	37	136	371XX	228	35	126	410XX	232	32	125	452XX	231	32	125
327XX	241	36	138	372XX	228	35	126	411XX	234	31	126	453XX	231	31	124
328XX	241	36	138	373XX	231	35	128	412XX	235	31	127	454XX	231	31	124
329XX	243	36	139	374XX	231	35	128	413XX	233	32	127	455XX	231	31	124
330XX	244	37	142	375XX	222	38	124	414XX	233	32	127	456XX	234	31	126
331XX	244	37	142	376XX	236	32	129	415XX	235	31	128	457XX	236	30	126
332XX	244	37	142	377XX	233	33	128	416XX	235	32	127	458XX	231	30	123
333XX	244	37	141	378XX	233	33	128	417XX	234	32	127	459XX	231	32	125
334XX	244	37	141	379XX	233	34	128	418XX	234	32	127	460XX	227	32	123
335XX	240	37	138	380XX	223	37	124	420XX	224	36	124	461XX	227	32	123
336XX	240	38	138	381XX	222	38	124	421XX	229	34	126	462XX	227	32	123
337XX	239	38	138	382XX	223	36	124	422XX	227	35	125	463XX	225	31	121
338XX	241	37	138	383XX	224	37	125	423XX	226	34	124	464XX	225	31	120
339XX	241	38	140	384XX	226	36	126	424XX	225	35	124	465XX	227	31	121
342XX	240	38	138	385XX	230	34	127	425XX	231	33	126	466XX	227	31	121
344XX	239	37	137	386XX	222	38	125	426XX	231	34	127	467XX	228	31	122
346XX	239	38	137	387XX	222	40	125	427XX	229	34	125	468XX	228	31	122
347XX	240	37	138	388XX	225	38	126	430XX	233	30	125	469XX	228	31	122
349XX	244	36	140	389XX	222	39	125	431XX	234	30	125	470XX	230	32	124
350XX	228	37	128	390XX	223	40	127	432XX	233	30	125	471XX	228	33	124
351XX	228	37	128	391XX	223	40	127	433XX	233	30	124	472XX	228	32	124
352XX	228	37	128	392XX	223	40	127	434XX	234	29	123	473XX	229	31	123
354XX	227	38	128	393XX	226	39	128	435XX	231	30	123	474XX	227	33	123
355XX	227	37	127	394XX	225	41	129	436XX	232	29	123	475XX	226	34	123
356XX	227	37	127	395XX	226	41	130	437XX	236	29	126	476XX	226	34	123
357XX	229	36	127	396XX	223	41	127	438XX	235	29	125	477XX	225	34	123
358XX	229	36	127	397XX	225	39	127	439XX	237	29	126	478XX	225	33	122
359XX	230	36	128	398XX	236	37	133	440XX	236	28	124	479XX	226	32	122
360XX	231	38	130	399XX	233	35	130	441XX	236	28	124	480XX	233	28	122
361XX	230	38	130	400XX	230	33	125	442XX	236	28	125	481XX	232	29	122
362XX	230	36	129	401XX	228	34	125	443XX	236	28	125	482XX	233	28	123

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
483XX	233	28	122	525XX	214	35	117	570XX	204	34	111	613XX	221	33	119
484XX	232	28	122	526XX	216	34	118	571XX	205	34	112	614XX	219	34	119
485XX	232	28	122	527XX	218	33	118	572XX	204	33	110	615XX	220	33	119
486XX	230	28	120	528XX	218	33	118	573XX	202	35	110	616XX	221	33	119
487XX	232	28	121	530XX	222	30	118	574XX	199	33	109	617XX	222	33	120
488XX	230	29	121	531XX	222	31	119	575XX	197	35	108	618XX	224	33	121
489XX	230	29	121	532XX	222	31	119	576XX	194	34	107	619XX	223	33	121
490XX	228	30	121	534XX	224	31	119	577XX	191	36	106	620XX	220	35	121
491XX	227	31	121	535XX	219	32	118	580XX	202	31	109	622XX	221	35	121
492XX	231	29	122	537XX	220	31	118	581XX	203	31	109	623XX	217	35	119
493XX	228	29	120	538XX	217	32	117	582XX	201	30	108	624XX	223	34	122
494XX	226	30	120	539XX	219	31	117	583XX	198	31	107	625XX	222	34	121
495XX	228	29	120	540XX	213	31	114	584XX	199	32	108	626XX	220	34	120
496XX	227	28	119	541XX	222	29	117	585XX	194	33	106	627XX	220	34	120
497XX	230	27	119	542XX	223	29	118	586XX	191	33	105	628XX	223	35	122
498XX	224	28	117	543XX	223	29	117	587XX	193	31	105	629XX	223	36	123
499XX	221	28	115	544XX	218	30	116	588XX	189	32	103	630XX	219	36	121
500XX	211	35	115	545XX	218	29	115	590XX	181	35	100	631XX	220	35	121
501XX	212	34	116	546XX	217	31	116	591XX	181	36	100	633XX	218	36	120
502XX	211	34	116	547XX	215	31	115	592XX	185	32	102	634XX	216	35	118
503XX	211	35	116	548XX	215	30	114	593XX	186	34	103	635XX	214	35	117
504XX	212	33	115	549XX	221	30	117	594XX	175	34	97	636XX	219	36	121
505XX	210	34	114	550XX	212	31	114	595XX	177	33	99	637XX	221	36	122
506XX	213	33	116	551XX	211	31	113	596XX	174	35	97	638XX	222	37	123
507XX	215	33	116	553XX	210	32	113	597XX	174	36	97	639XX	220	37	122
508XX	210	36	115	554XX	211	31	113	598XX	170	35	95	640XX	212	37	117
509XX	211	35	116	555XX	210	32	113	599XX	169	34	94	641XX	211	37	117
510XX	206	35	113	556XX	216	28	113	600XX	223	31	119	644XX	210	36	116
511XX	206	35	113	557XX	212	29	112	601XX	223	32	119	645XX	210	37	116
512XX	206	34	112	558XX	213	29	113	602XX	223	31	120	646XX	212	36	117
513XX	208	34	113	559XX	214	32	115	603XX	223	31	120	647XX	211	38	118
514XX	208	35	114	560XX	210	33	114	604XX	223	32	120	648XX	212	39	119
515XX	208	36	114	561XX	207	33	112	605XX	223	32	120	649XX	211	37	117
516XX	209	36	115	562XX	206	32	112	606XX	223	31	120	650XX	216	37	119
520XX	217	33	117	563XX	208	31	112	607XX	223	31	120	651XX	216	37	119
521XX	215	32	116	564XX	208	31	111	609XX	223	32	121	652XX	215	36	119
522XX	216	33	117	565XX	204	31	110	610XX	220	32	118	653XX	213	37	118
523XX	216	33	117	566XX	208	29	111	611XX	220	32	119	654XX	217	37	120
524XX	216	33	117	567XX	203	30	109	612XX	218	33	118	655XX	217	37	120

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
656XX	214	38	120	705XX	220	43	127	748XX	209	42	118	788XX	206	49	119
657XX	215	38	120	706XX	219	44	126	749XX	213	41	120	789XX	212	46	123
658XX	214	38	119	707XX	222	42	128	750XX	210	44	120	790XX	199	44	113
660XX	210	38	116	708XX	222	42	128	751XX	211	44	120	791XX	199	44	112
661XX	210	37	117	710XX	217	42	124	752XX	210	44	120	792XX	202	44	114
662XX	210	37	117	711XX	216	42	123	753XX	210	44	120	793XX	199	46	113
664XX	207	38	115	712XX	220	41	125	754XX	211	43	120	794XX	200	46	113
665XX	207	38	115	713XX	220	42	126	755XX	214	42	122	795XX	204	46	116
666XX	209	38	116	714XX	218	43	125	756XX	215	43	122	796XX	204	46	117
667XX	211	39	117	716XX	219	40	124	757XX	213	44	122	797XX	200	48	114
668XX	208	39	116	717XX	217	41	123	758XX	213	44	122	798XX	196	50	112
669XX	204	38	113	718XX	215	41	122	759XX	216	44	124	799XX	192	49	109
670XX	205	40	115	719XX	216	41	122	760XX	209	44	119	800XX	190	41	106
671XX	205	40	115	720XX	218	39	123	761XX	209	44	119	801XX	191	41	107
672XX	206	40	115	721XX	218	39	123	762XX	208	44	119	802XX	190	41	106
673XX	209	39	117	722XX	218	40	122	763XX	206	44	117	803XX	190	41	106
674XX	205	39	114	723XX	221	38	124	764XX	207	45	118	804XX	188	41	105
675XX	202	40	113	724XX	220	38	123	765XX	210	46	121	805XX	190	40	106
676XX	201	39	112	725XX	218	38	122	766XX	210	45	121	806XX	191	40	106
677XX	198	40	110	726XX	215	39	121	767XX	210	45	121	807XX	194	39	108
678XX	199	41	112	727XX	213	40	120	768XX	206	47	118	808XX	193	41	108
679XX	198	42	111	728XX	215	40	121	769XX	204	47	117	809XX	191	42	107
680XX	206	36	113	729XX	213	40	120	770XX	215	46	124	810XX	194	42	108
681XX	207	36	114	730XX	207	42	117	772XX	215	46	124	811XX	189	43	106
683XX	206	37	114	731XX	207	42	117	773XX	215	45	124	812XX	189	42	106
684XX	206	37	114	733XX	210	47	121	774XX	214	46	124	813XX	185	44	103
685XX	206	37	114	734XX	209	43	118	775XX	216	46	125	814XX	185	43	104
686XX	204	36	112	735XX	206	43	116	776XX	217	45	125	815XX	183	42	103
687XX	203	36	112	736XX	203	43	115	777XX	217	45	125	816XX	186	41	104
688XX	201	37	111	737XX	205	41	115	778XX	213	46	122	820XX	190	39	105
689XX	201	38	112	738XX	202	42	114	779XX	212	47	123	821XX	177	37	99
690XX	198	39	110	739XX	198	42	112	780XX	209	48	121	822XX	190	38	105
691XX	196	38	109	740XX	209	41	117	781XX	210	48	122	823XX	185	39	103
692XX	197	37	109	741XX	209	41	118	782XX	209	48	121	824XX	181	37	101
693XX	192	38	107	743XX	211	40	118	783XX	212	49	124	825XX	181	38	101
700XX	225	42	129	744XX	211	41	119	784XX	213	49	124	826XX	186	38	103
701XX	225	42	129	745XX	211	42	119	785XX	213	50	125	827XX	188	36	104
703XX	223	43	129	746XX	208	41	116	786XX	210	47	121	828XX	184	36	102
704XX	224	42	129	747XX	212	42	120	787XX	210	47	121	829XX	180	40	100

ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK	ZIP CODE RANGE	AZ	EL	SK
830XX	177	38	99	882XX	196	47	112	930XX	167	49	91	975XX	157	40	86
831XX	179	39	99	883XX	193	47	109	931XX	166	49	90	976XX	161	40	88
832XX	175	39	97	884XX	195	44	110	932XX	165	47	90	977XX	161	39	89
833XX	171	39	95	885XX	192	49	109	933XX	167	48	91	978XX	163	37	91
834XX	175	38	97	889XX	173	47	95	934XX	163	48	89	979XX	166	38	92
835XX	166	36	93	890XX	172	46	95	935XX	168	48	92	980XX	157	35	88
836XX	167	38	93	891XX	173	47	96	936XX	165	46	90	981XX	156	34	87
837XX	168	39	93	893XX	171	43	95	937XX	165	46	90	982XX	156	34	88
838XX	166	34	93	894XX	165	43	91	938XX	165	46	90	983XX	156	35	87
840XX	178	41	99	895XX	164	43	90	939XX	162	46	87	984XX	156	35	87
841XX	177	41	98	897XX	164	44	90	940XX	160	45	87	985XX	155	35	87
842XX	176	41	98	898XX	170	41	94	941XX	159	45	86	986XX	157	36	87
843XX	176	40	98	900XX	168	49	92	942XX	161	44	88	988XX	160	34	90
844XX	176	41	98	902XX	168	49	92	943XX	160	45	87	989XX	160	36	89
845XX	181	43	101	903XX	168	49	92	944XX	160	45	87	990XX	164	34	92
846XX	177	43	99	904XX	168	49	91	945XX	160	45	87	991XX	163	34	91
847XX	177	45	98	905XX	168	49	92	946XX	160	45	87	992XX	164	34	92
850XX	181	49	100	906XX	168	49	92	947XX	160	45	87	993XX	162	36	91
852XX	181	49	101	907XX	168	49	92	948XX	160	45	87	994XX	165	36	92
853XX	178	49	99	908XX	168	49	92	949XX	159	45	86	995XX	119	15	71
855XX	184	49	103	910XX	168	49	92	950XX	161	46	87	996XX	118	15	71
856XX	184	50	103	911XX	168	49	92	951XX	160	46	87	997XX	119	11	76
857XX	183	50	103	912XX	168	49	92	952XX	162	45	88	998XX	136	22	81
859XX	184	48	103	913XX	168	49	91	953XX	163	45	89	999XX	139	25	82
860XX	180	47	101	914XX	168	49	91	954XX	159	44	86				
863XX	179	48	100	915XX	168	49	92	955XX	157	42	85				
864XX	176	47	97	916XX	168	49	92	956XX	161	44	88				
865XX	184	46	103	917XX	169	49	92	957XX	162	44	88				
870XX	189	46	107	918XX	168	49	92	958XX	161	44	88				
871XX	190	46	107	919XX	172	51	94	959XX	161	43	88				
872XX	190	46	107	920XX	171	50	93	960XX	159	42	87				
873XX	186	46	104	921XX	171	50	93	961XX	163	43	89				
874XX	186	45	104	922XX	173	49	95	967XX	101	41	33				
875XX	190	45	107	923XX	170	49	93	968XX	100	40	33				
877XX	192	44	108	924XX	170	49	93	970XX	157	37	87				
878XX	189	47	106	925XX	170	49	93	971XX	156	37	86				
879XX	190	48	107	926XX	169	49	92	972XX	157	37	87				
880XX	189	49	107	927XX	169	49	92	973XX	156	37	86				
881XX	196	46	111	928XX	169	49	92	974XX	156	39	86				

Notes

Radio Interference

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Modifying this receiver may void your authority to use the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

If none of the remedies stops the radio interference, you should contact a licensed radio/television technician, your satellite dealer, or call the Customer Service Center at 1-800-894-9131 for assistance.

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